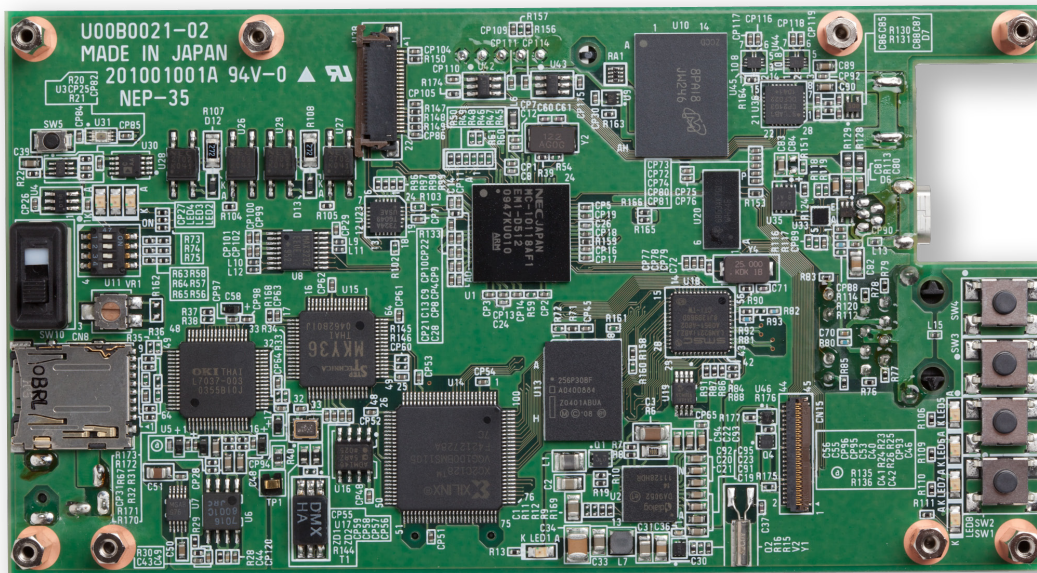# T-Engine Reference Board

(U00B0021-02-CPU)

R⊚HS

in full-scale

- Reference Board Certified by T-Engine Forum as Target Board for T-Kernel 2.0.

- Powerful CPU (ARM11 Core 500MHz).

- Various I/O Interfaces such as LAN, USB 2.0, Serial, GPIO, microSD.

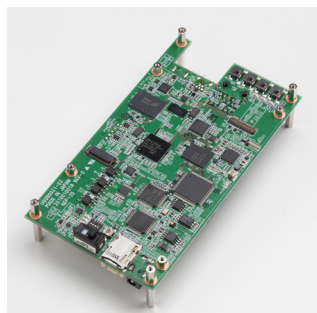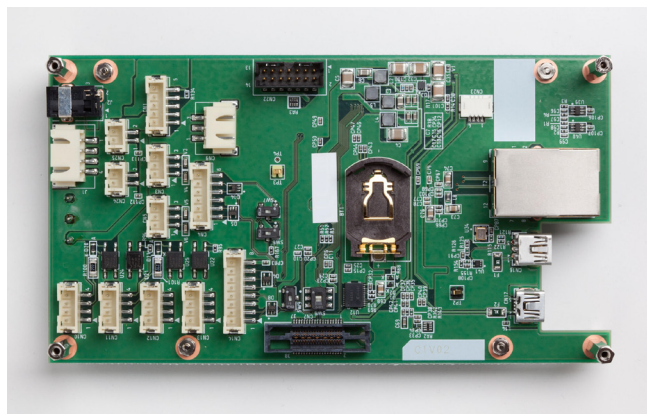**Standard Price (Tax not included) 49,800yen**

※T-Engine Reference Board(U00B0021-02-CPU) is the same hardware as the CPU board of "T-Kernel 2.0 Reference Kit".

※To use this product, an AC adapter and a conversion cable are needed. Please prepare them separately.

■ Features of "T-Engine Reference Board"

· The reference board certified by T-Engine Forum. T-Kernel 2.0 provided by T-Engine forum as an open source software runs on this board with no change.

· This board can be used for an evaluation of T-Kernel 2.0 itself and an evaluation or a development of embedded devices with T-Kernel 2.0[*1].

· This board features various I/O devices such as LAN, USB 2.0, UART(Serial), GPIO, microSD card, eMMC, sound, HLS(High-speed Link System), chip LED, PUSH switch, illuminance sensor, temperature sensor.

· Environmentally-friendly RoHS compliant product.

[*1] The software including T-Kernel 2.0, T-Monitor, device drivers, and development environment are not provided with this product. Please download the software at T-Engine Forum's website by yourself and use them at your own risk, according to the software license agreement written by T-Engine Forum. We don't accept your technical questions about these software provided by T-Engine Forum.

■ Product Specification

Hardware specification
● CPU board

CPU	Renesas Electronics EMMA Mobile1-D (ARM11 Core,500MHz)
Flash ROM	32MB (NOR Flash)
RAM	64MB (CPU built-in)
eMMC	4GB
JTAG-ICE I/F	for Kyoto Microcomputer Co., Ltd.'s PARTNER-Jet
Power supply	DC5V±5%, MAX 2A (AC adapter is sold separately.)
Power jack	M04-730A0 (Marushin electric mfg. Co., Ltd.) Adapted plug: ⌀1.7mm DS plug (external diameter: ⌀4mm) EIAJ RC5320A Type2 Polarity: center[+]
Dimensions	CPU board: 137mm×75mm (not including protrusions)
RoHS	Compliant
I/O Interfaces	
microSD slot	1 slot
LAN	10/100BASE-T, RJ-45 connector
USB-OTG[*1]	supporting USB 2,0, mini-AB connector
USB-UART	mini-B connector
Serial[*2]×2	RS-232 or CMOS level shift
Insulated I/O[*2]×4 bits	insulated GPIO by photo coupler
Sound[*2]	Microphone-in, Speaker-out
HLS[*2]	High-speed Link System
Others	Chip LED×4, PUSH Switch×4, illuminance sensor, temperature sensor, camera module(optional)

(*1) You need USB host cable with USB mini-A connector for connecting USB devices such as mouse, keyboard, USB mass storage. The software including device drivers are not attached.

(*2) Box-type substrate connectors on CPU board are used (e.g. JST's B3B-PH-SM4-TB). Connectors such as D-SUB are not attached.

■ Reference Books and Related Information

- T-Kernel Standard Handbook, Ken Sakamura (Ed.), **3800yen**.
  * English documents are included as PDF files on CD-ROM.
- T-Kernel Kumikomi Programing Kyokasho (A Practical Guide to T-Kernel Embedded Programing), Ken Sakamura (Ed.), **4200yen**.
- Jissen TRON Kumikomi Programming(A Practical Guide to T-Kernel Embedded Programming for beginners), Ken Sakamura(Ed.), **3200yen**.
- TRONWARE Vol.1-132 (TRON bimonthly magazine, scheduled to be continued), **1200yen** (ordinary issue).
* The above books are published by Personal Media Corporation in Japanese. Tax is not included.

- T-Kernel Kumikomi Programing Kyokasho(E-book for iPad), Ken Sakamura(Ed.).
- Jissen TRON Kumikomi Programming(E-book for iPad), Ken Sakamura(Ed.).
* The above e-books are available at App Store. These e-books are written in Japanese.

T-Engine Forum **http://www.t-engine.org/**

Personal Media Corporation (T-Engine Solution Website) **http://www.t-engine4u.com/en/**

PMC International Retail Site **http://www.personal-media.co.jp/retail/**

Personal Media Corporation Koizumi Bldg. 1-29-1 Nishi-Gotanda, Shinagawa-ku, Tokyo 141-0031 Japan

Tel: +81-3-5759-8305 ／ Fax: +81-3-5759-8306 ／ E-mail:te-sales@personal-media.co.jp ／ http://www.personal-media.co.jp/

■TRON is an abbreviation of "The Real-time Operating System Nucleus".
■TRON, T-Engine, μT-Engine, T-Monitor, and T-Kernel are specified terms for computers, and are not product names.
■Due to continued product upgrade or enhancement, the information in this document is subject to change without notice.